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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/688,961	10/17/2000	ALAIN BETHUNE	107615	1437

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EXAMINER

LORENZO, JERRY A

ART UNIT	PAPER NUMBER
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1734

DATE MAILED: 06/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/688,961

Applicant(s)

BETHUNE, ALAIN

Examiner

Jerry A. Lorengo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 and 24-41 is/are pending in the application.
- 4a) Of the above claim(s) 14-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 and 24-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-22 and 24-41 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 11.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

(1)

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-13, 21, 22 and 25-41, drawn to a hot marking method enabling decoration to be made on an article classified in class 156, subclass 230.
- II. Claims 14-20, drawn to a multilayer structure, classified in class 428, subclass 195.

The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the product as claimed can be used in a materially different process of using that product such as wherein the layer of varnish that hardens under the effect of radiation is fully cured prior to transfer of the decoration to the substrate.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Mr. Brown on June 5, 2003 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-13, 21, 22 and 25-41. Affirmation of this election must be made by applicant in replying to this Office action. Claims 14-20 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

(2)

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 6, 9, 10, 24, 25, 26, 31, 34, 35 and 41 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 01-202492 to Doi et al.

Regarding applicant claims 1 and 26, Doi et al. disclose a method of decorating a substrate comprising the steps of (Translation of Cited Reference 1):

(1) Supplying a multilayer structure comprising, in order, a release sheet (backing), a layer of radiation curable protective resin (varnish) thereon; a decorative layer disposed thereon; and a layer of heat activated adhesive thereon;

(2) Exposing the protective resin layer to radiation to render it half-cured and solid;

(3) Contacting the multilayer structure with the surface of a target substrate;

(4) Applying pressure and heat with a heated roller thereby activating the heat activated adhesive layer to bond the decorative and protective resin layers to the target substrate;

(5) Withdrawing the release sheet; and

(6) Exposing the transferred layers to further radiation causing the protective resin layer to fully cure whereby the transferred layers remain on the surface of the target substrate.

Regarding applicant claims 6 and 31, Doi et al. disclose that the protective resin layer applied to the release sheet contains MEK, a solvent.

Regarding applicant claims 9 and 34, Doi et al. disclose that the release sheet comprises a polyester film.

Regarding applicant claims 10 and 35, Doi et al. disclose that the decorative layer is covered by a layer of heat activated (hot-melt) adhesive.

Regarding applicant claim 24, Doi et al. disclose that the transferred layers remain coherent as a rugged surface.

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Regarding applicant claim 26 and 41, Doi et al. disclose that the substrate may comprise a resin, i.e., a plastic article.

(3)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 12 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 01-202492 to Doi et al., as set forth in section (2), above, in further view of U.S. Patent No. 4,215,170 to Vilaprinyo Oliva

Doi et al., as set forth in section (2), above, disclose a method of decorating a substrate comprising the steps of: Supplying a multilayer structure comprising, in order, a release sheet (backing), a layer of radiation curable protective resin (varnish) thereon; a decorative layer disposed thereon; and a layer of heat activated adhesive thereon; exposing the protective resin layer to radiation to render it half-cured and solid; contacting the multilayer structure with the surface of a target substrate; applying pressure and heat with a heated roller thereby activating the heat activated adhesive layer to bond the decorative and protective resin layers to the target substrate; withdrawing the release sheet; and exposing the transferred layers to further radiation causing the protective resin layer to fully cure whereby the transferred layers remain on the surface of the target substrate.

Although Doi et al. disclose that the decorative layer consists of a thin metallic layer applied to the UV curable protective resin layer, they do not specifically disclose the manner in which the metal design layer is formed. Nonetheless, it would have been obvious to one of ordinary skill in the art at the time of invention to utilize the vacuum metallization method motivated by the fact that Vilaprinyo Oliva, drawn to metallization processes, discloses that vacuum metallization is a known process for forming metallized layer on multiplayer transfer structures a (column 3, lines 14-18).

(4)

Claims 2, 4, 5, 7, 8, 11, 13, 21, 27, 29, 30, 32, 33, 36, 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 01-202492 to Doi et al., as set forth in section (2), above, in further view of U.S. Patent No. 4,294,641 to Reed et al.

Doi et al., as set forth in section (2), above, disclose a method of decorating a substrate comprising the steps of: Supplying a multilayer structure comprising, in order, a release sheet (backing), a layer of radiation curable protective resin (varnish) thereon; a decorative layer disposed thereon; and a layer of heat activated adhesive thereon; exposing the protective resin layer to radiation to render it half-cured and solid; contacting the multilayer structure with the surface of a target substrate; applying pressure and heat with a heated roller thereby activating the heat activated adhesive layer to bond the decorative and protective resin layers to the target substrate; withdrawing the release sheet; and exposing the transferred layers to further radiation causing the protective resin layer to fully cure whereby the transferred layers remain on the surface of the target substrate.

Although they disclose that the protective resin layer is curable by UV radiation, they do not specifically disclose the particular chemical makeup of the resin as set forth in applicant claims 2, 4, 5, 7, 8, 27, 29, 30, 32 and 33. Although they disclose that the decorative layer may comprise a metallic layer, they do not specifically disclose, as per applicant claims 13 and 38 that it comprises a printed ink layer.

Reed et al., however, also drawn to a method of decorating a substrate by the thermal transfer, discloses a method comprising the steps of:

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(1) Providing a transfer sheet comprising, in order, a support sheet (backing layer), a transfer resin layer (varnish layer) that cures under the effect of radiation, and a design (decoration) layer (column 7, lines 22-40);

(2) Bringing the transfer sheet into contact with an article to be decorated (column 9, lines 3-30);

(3) Applying localized pressure and heat to the carrier sheet to transfer a localized portion of the resin and design layer to the article (column 9, lines 31-42);

(4) Removing the carrier sheet (column 14, lines 45-47); and

(5) Causing the resin layer that has been transferred to the article to harden (cure) by exposing it to radiation to thereby produce, an article having a decoration applied thereto (column 14, lines 48-55).

As per applicant claims 2, 4, 27 and 29, Reed et al. disclose that the transfer layer comprises a UV or thermally curable hydroxylated urethane acrylate such as acrylated polyurethane (column 6, lines 5-12; column 14, line 20).

As per applicant claims 5 and 30, Reed et al. disclose that the transfer layer includes acrylated polyurethane, a low molecular-weight prepolymer oligomer (column 14, line 21).

As per applicant claim 7 and 32, Reed et al. disclose that the transfer layer may include pigments (column 14, lines 40-44).

As per applicant claims 8 and 33, Reed et al. disclose that the transfer layer includes photo-initiators at a concentration of 2.47 wt% (column 14, lines 22-24).

As per applicant claims 13 and 38, Reed et al. disclose that the design layer is a layer of ink deposited by printing onto the transfer layer prior to the exposure of the transfer layer to UV curing (column 7, lines 28-51).

Given the disclosure of Reed et al. it would have been obvious to one of ordinary skill in the art at the time of invention to utilize the specific UV curable resin materials set forth in applicant claims 2, 4, 5, 7, 8, 27, 29, 30, 32 and 33, and disclosed by Reed et al., in the method of Doi et al. motivated by the fact that the skilled artisan would have appreciated their applicability given the fact that both Doi et al. and Reed et al. are both drawn to methods for the thermal transfer decoration of substrate utilizing a a transfer sheet having a transferable outer protective layer which may be UV cured after transfer to provide a rugged and durable decoration.

It also would have been obvious to one of ordinary skill in the art at the time of invention, as per applicant claims 13 and 38, to substitute the metallic decorative layer of Doi et al. with the printed in decoration layer of Reed et al. motivated by the fact that such a substitution would enable increase the decorative and aesthetic possibilities of the Doi et al. methodology.

Although Reed et al. disclose that the transfer layer includes photo-initiators at a concentration of 2.47 wt%, they do not specifically disclose, as per applicant claims 21 and 39, that the photo-initiators are present at a concentration by weight of about 0.5%.

It would have been obvious to one of ordinary skill in the art at the time of invention to utilize any effective amount of photo-initiator in compounding the transfer layer of Reed et al., for use in the method of Doi et al., motivated by the fact that the claimed amount of photo-initiator would have been the result of routine experimentation by one of ordinary skill in the art taking into consideration the polymers utilized and the method and means of UV exposure, etc.

Finally, although Doi et al. and Reed et al., as set forth in section (1), above, discloses that the transfer layer is UV cured after the support sheet is removed, they do not specifically disclose, as per applicant claims 11 and 36, that the transfer layer is exposed to UV radiation while its temperature is still close to the maximum temperature thereof during transfer and wherein the temperature difference is less than 30% of the maximum temperature.

It would have been obvious to one of ordinary skill in the art at the time of invention to initiate UV curing as soon as possible after the heat transfer step motivated by the fact the skilled artisan, given the disclosure by Reed et al., for example, that cross-linking is initiated by the heat utilized in the transfer step, would have appreciated that immediate UV exposure would be required in order to maintain curing inertia (column 6, lines 5-12). Furthermore, the claimed temperature differential represented by the transfer layer during transfer and at the point of UV exposure would have been the result of routine experimentation by one of ordinary skill in the art taking into consideration the specific materials used, type of photo-initiators used, and the method of heating used during transfer.

(5)

Claims 3 and 28 rejected under 35 U.S.C. 103(a) as being unpatentable over the references as combined in section (4), above, in further view of U.S. Patent No. 5,581,978 to Hekal et al..

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Although Reed et al., as combined in section (4), above, disclose that the transfer layer comprises a UV or thermally curable hydroxylated urethane acrylate such as acrylated polyurethane, they do not specifically disclose, as per applicant claims 3 and 28, that the UV or thermally curable resin is based on a cationic system.

Hekal et al., also drawn to UV curable coatings, disclose that materials which work well for UV curable overcoatings include acrylated urethane, two part epoxy and urethane systems, and cationic systems (column 5, lines 13-19).

It would have been obvious to one of ordinary skill in the art at the time of invention to substitute a UV curable cationic resin for the acrylated polyurethane disclosed by Reed et al., for use in the method of Doi et al., motivated by the fact such compositions are interchangeable function expedients as suggested by Hekal et al.

(6)

Claims 22 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as combined in section (4), above, in further view of. U.S. Patent No. 4,133,723 to Howard et al.

Although Reed et al., as combined in section (4), above, disclose that the transfer layer comprises a low molecular weight oligomer such as UV or thermally curable acrylated polyurethane, they do not specifically disclose, as per applicant claims 22 and 40, that the molecular weights lie in a range from 800 to about 2000.

It would have been obvious to one of ordinary skill in the art at the time of invention to utilize a low molecular weight oligomer such acrylated polyurethane having a molecular weight within the claimed range motivated by the fact that Howard, also drawn to radiation curable coatings, discloses that acrylated urethane oligomers having molecular weights ranging from 410 to 1000 (Table I) are useful in forming radiation curable coatings (abstract).

(6)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry A. Lorengo whose telephone number is (703) 306-9172. The examiner can normally be reached on Monday through Friday, 8:30 A.M. to 5:00 P.M.

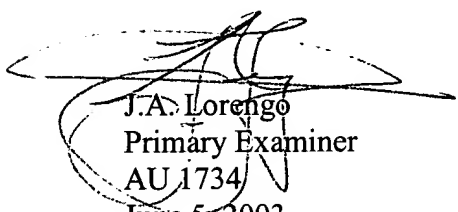
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (703) 308-3853. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7115 for regular communications and (703) 872-9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



J.A. Lorengo
Primary Examiner
AU 1734
June 5, 2003